

University of Dundee

Corrigendum

Crozier, Louise; Hedley, Pete E.; Morris, Jenny; Wagstaff, Carol; Andrews, Simon C.; Toth, Ian

Published in:
Frontiers in Microbiology

DOI:
[10.3389/fmicb.2016.01506](https://doi.org/10.3389/fmicb.2016.01506)

Publication date:
2016

Licence:
CC BY

Document Version
Publisher's PDF, also known as Version of record

[Link to publication in Discovery Research Portal](#)

Citation for published version (APA):

Crozier, L., Hedley, P. E., Morris, J., Wagstaff, C., Andrews, S. C., Toth, I., Jackson, R. W., & Holden, N. J. (2016). Corrigendum: Whole-Transcriptome Analysis of Verocytotoxigenic *Escherichia coli* O157:H7 (Sakai) Suggests Plant-Species-Specific Metabolic Responses on Exposure to Spinach and Lettuce Extracts. *Frontiers in Microbiology*, 7, 1-2. [1506]. <https://doi.org/10.3389/fmicb.2016.01506>

General rights

Copyright and moral rights for the publications made accessible in Discovery Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from Discovery Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying the publication in the public portal.

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.



Corrigendum: Whole-Transcriptome Analysis of Verocytotoxigenic *Escherichia coli* O157:H7 (Sakai) Suggests Plant-Species-Specific Metabolic Responses on Exposure to Spinach and Lettuce Extracts

Louise Crozier¹, Pete E. Hedley¹, Jenny Morris¹, Carol Wagstaff², Simon C. Andrews³, Ian Toth¹, Robert W. Jackson³ and Nicola J. Holden^{1*}

¹ Cell and Molecular Sciences, The James Hutton Institute, Dundee, UK, ² School of Chemistry, Food and Pharmacy, The University of Reading, Reading, UK, ³ School of Biological Sciences, The University of Reading, Reading, UK

Keywords: DNA microarray, stress response, *E. coli* O157:H7, vegetables, leaves, roots, adaptation, biological

OPEN ACCESS

Edited by:

Christophe Nguyen-The,
Institut National de la Recherche
Agronomique, France

Reviewed by:

Maria T. Brandl,
Agricultural Research Service, USA

*Correspondence:

Nicola J. Holden
nicola.holden@hutton.ac.uk

Specialty section:

This article was submitted to
Food Microbiology,
a section of the journal
Frontiers in Microbiology

Received: 02 September 2016

Accepted: 08 September 2016

Published: 21 September 2016

Citation:

Crozier L, Hedley PE, Morris J,
Wagstaff C, Andrews SC, Toth I,
Jackson RW and Holden NJ (2016)
Corrigendum: Whole-Transcriptome
Analysis of Verocytotoxigenic
Escherichia coli O157:H7 (Sakai)
Suggests Plant-Species-Specific
Metabolic Responses on Exposure to
Spinach and Lettuce Extracts.
Front. Microbiol. 7:1506.
doi: 10.3389/fmicb.2016.01506

A corrigendum on

Whole-Transcriptome Analysis of Verocytotoxigenic *Escherichia coli* O157:H7 (Sakai) Suggests Plant-Species-Specific Metabolic Responses on Exposure to Spinach and Lettuce Extracts
by Crozier, L., Hedley, P. E., Morris, J., Wagstaff, C., Andrews, S. C., Toth, I., et al. (2016). *Front. Microbiol.* 7:1088. doi: 10.3389/fmicb.2016.01088

In the Introduction to the article, one of the references, Kyle et al. (2010) was included in error in the statement “However, in many reports on plant-colonization transcriptomics the bacteria were initially cultured at body temperature (37°C) and were subsequently exposed to plant (or plant extracts) at environmental temperature (~18°C); such experimental regimes result in a considerable temperature shift, in addition to the exposure to plant or plant extracts (Thilmony et al., 2006; Kyle et al., 2010; Hou et al., 2012, 2013; Jayaraman et al., 2014)”. Instead, the Kyle et al. study used a temperature of 28°C throughout the experiment, for initial culturing of the inoculum and for subsequent bacteria-plant interactions, so that the bacteria did not encounter a temperature shift. An extract from the Methods section is provided below. Erroneous inclusion of this reference in the statement has no impact on the scientific validity of the results presented.

The correct statement is: “However, in many reports on plant-colonization transcriptomics the bacteria were initially cultured at body temperature (37°C) and were subsequently exposed to plant (or plant extracts) at environmental temperature (~18°C); such experimental regimes result in a considerable temperature shift, in addition to the exposure to plant or plant extracts (Thilmony et al., 2006; Jayaraman et al., 2014; Hou et al., 2012, 2013)”

Extract of the Methods section from Kyle et al. (2010):

“For experiments measuring early gene expression in lettuce leaf lysate (by microarray and QRT-PCR) or on shredded lettuce (by QRT-PCR), overnight cultures were transferred to fresh M9-glucose and grown for several hours into the mid-log phase of growth at 28°C and 150 rpm and then washed twice with KP buffer before inoculation. The lysates were inoculated with EcO157 cells in the mid-log phase of growth in minimal medium in order to isolate the bacterial responses to romaine lettuce lysates from changes in gene expression solely caused by the transition out

of stationary phase (6). Lysates were inoculated at 5×10^6 CFU/ml for growth experiments and at 10^8 CFU/ml for microarray analysis and QRT-PCR and then incubated at 28°C with shaking at 150 rpm. In order to evaluate gene expression in EcO157 in lettuce lysates, samples for RNA extraction and subsequent microarray or QRT-PCR analysis were taken at 15 or 30 min after exposure of mid-log-phase EcO157 cells to freshly prepared lysates. Short incubation periods in the lysates at 28°C were used in order to characterize the early response of the pathogen to

fluids leaking out of leaf cells after injury occurred, at an ambient daytime temperature that would be present in the field during growth and harvesting, or during processing under conditions that would fail to maintain cool temperatures.”

AUTHOR CONTRIBUTIONS

NH: wrote the correction statement. LC, PH, JM, CW, SA, IT, RJ, and NH: approved statement.

REFERENCES

- Hou, Z., Fink, R. C., Black, E., Sugawara, M., Zhang, Z., Diez-Gonzalez, F., et al. (2012). Gene expression profiling of *Escherichia coli* in response to interactions with the lettuce rhizosphere. *J. Appl. Microbiol.* 113, 1076–1086. doi: 10.1111/j.1365-2672.2012.05412.x
- Hou, Z., Fink, R. C., Sugawara, M., Diez-Gonzalez, F., and Sadowsky, M. J. (2013). Transcriptional and functional responses of *Escherichia coli* O157:H7 growing in the lettuce rhizosphere. *Food Microbiol.* 35, 136–142. doi: 10.1016/j.fm.2013.03.002
- Jayaraman, D., Valdés-López, O., Kaspar, C. W., and Ané, J.-M. (2014). Response of *Medicago truncatula* seedlings to colonization by *Salmonella enterica* and *Escherichia coli* O157:H7. *PLoS ONE* 9:e87970. doi: 10.1371/journal.pone.0087970
- Kyle, J. L., Parker, C. T., Goudeau, D., and Brandl, M. T. (2010). Transcriptome analysis of *Escherichia coli* O157:H7 exposed to lysates of lettuce leaves. *Appl. Environ. Microbiol.* 76, 1375–1387. doi: 10.1128/AEM.02461-09
- Thilmony, R., Underwood, W., and He, S. Y. (2006). Genome-wide transcriptional analysis of the *Arabidopsis thaliana* interaction with the plant pathogen *Pseudomonas syringae* pv. tomato DC3000 and the human pathogen *Escherichia coli* O157:H7. *Plant J.* 46, 34–53. doi: 10.1111/j.1365-3113X.2006.02725.x

Conflict of Interest Statement: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright © 2016 Crozier, Hedley, Morris, Wagstaff, Andrews, Toth, Jackson and Holden. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) or licensor are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.